Welding Technology I

#17236
Grades 10-12

- This course introduces students to a career in welding. The course begins covering various types of metal welding, brazing, flame cutting, properties of metals, blueprint reading, electrical principles, welding symbols and mechanical drawing. Emphasis on applied academics, professional development, leadership, and organizational skills are integrated throughout the curriculum. Welding Technology I is a perquisite course to Welding Technology II.

Credit:
1 or 2
Max credit = 2

- *Standards labeled as CORE are those parts of the S.E.N.S.E program that must be assessed in order to obtain student credentials. The other standards are assessed on a selection process for credential purposes. See S.E.N.S.E guidelines for more details.*

MISO3#17236	1 or 2 credit	Welding I
Standard 1	**Occupational Orientation***CORE*****	
	Student Competencies	
1.1	Fill out, maintain, and submit a time card, or work assignment card, and other records as required by an institution.	
1.2	Perform general housekeeping duties to maintain workspace, equipment, and tool cleanliness.	
1.3	Follow detailed verbal instructions given by an immediate supervisor to set up and carry out specific assignments.	
1.4	Follow detailed written instructions given by an immediate supervisor to set up and carry out specific assignments.	
Standard 2	**Safety and Health***CORE*****	
	Student Competencies	
2.1	Shows proper use and inspection of Personal Protective Equipment (PPE) while conducting, or in the vicinity of welding and cutting activities.	
2.2	Follows procedures established using the concepts and requirements from NFPA and OSHA to ensure the safety of the work area and the general public.	
2.3	Is aware of the dangers associated with welding and brazing fumes, and uses the best possible means of ventilation available for the capture of welding and brazing fumes as close to the source as possible.	
2.4	Follows established procedures and policies for implementing of emergency action plans and for the use of safety equipment and demonstrates proper Hot Zone operation.	
2.5	Follows established procedures and policies for working in confined areas.	
2.6	Is aware of the purpose of precautionary labels and Material Safety Data Sheets (MSDSs) and refers to them for materials used in support of welding and cutting activities.	
2.7	Demonstrates proper inspection and operation of equipment used for each welding and thermal cutting process.	

Standard 3	Drawing and Welding Symbol Interpretation***CORE***
	Student Competencies
3.1	Interprets basic elements of a drawing or sketch.
3.2	Interprets welding symbol information.
Standard 4	**Shielded Metal Arc Welding (SMAW)**
	Student Competencies
4.1	Performs safety inspections of SMAW equipment and accessories.
4.2	Makes minor external repairs to SMAW equipment and accessories.
4.3	Sets up for SMAW operations on carbon steel.
4.4	Operates SMAW equipment on carbon steel.
4.5	Makes fillet welds, in all positions, on carbon steel.
4.6	Makes groove welds, in all positions, on carbon steel.
Standard 5	**Gas Metal Arc Welding (GMAW-S, GMAW spray transfer)**
	Student Competencies
5.1	Performs safety inspections of GMAW equipment and accessories.
5.2	Makes minor external repairs to GMAW equipment and accessories.
	Short Circuiting Transfer
5.3	Sets up for GMAW-S operations on carbon steel.
5.4	Operates GMAW-S equipment on carbon steel.
Standard 6	**Flux Cored Arc Welding (FCAW-G/GM, FCAW-S)**
	Student Competencies
6.1	Performs safety inspections of FCAW equipment and accessories.
6.2	Makes minor external repairs to FCAW equipment and accessories.

	Gas Shielded
6.3	Sets up for FCAW-G/GM operations on carbon steel.
6.4	Operates FCAW-G/GM equipment on carbon steel.
	Self-Shielded
6.8	Sets up for FCAW- S operations on carbon steel.
6.9	Operates FCAW- S equipment on carbon steel.
Standard 7	**Gas Tungsten Arc Welding (GTAW)**
	Student Competencies
7.1	Performs safety inspections of GTAW equipment and accessories.
7.2	Makes minor external repairs to GTAW equipment and accessories.
	Carbon Steel
7.3	Sets up for GTAW operations on carbon steel.
7.4	Operates GTAW equipment on carbon steel.
Standard 8	**Thermal Cutting Processes***CORE*****
	Student Competencies
8.1	***Manual Oxyfuel Gas Cutting (OFC)***
8.1.1	Performs safety inspections of manual OFC equipment and accessories.
8.1.2	Makes minor external repairs to manual OFC equipment and accessories.
8.1.3	Sets up for manual OFC operations on carbon steel.
8.1.4	Operates manual OFC equipment on carbon steel.
8.1.5	Performs straight, square edge cutting operations, in the flat position, on carbon steel.
8.1.6	Performs shape, square edge cutting operations, in the flat position, on carbon steel.
8.1.7	Performs straight, bevel edge cutting operations, in the flat position, on carbon steel.

8.3	***Manuel Plasma Arc Cutting (PAC)***
8.3.1	Performs safety inspections of manual PAC equipment and accessories.
8.3.2	Makes minor external repairs to manual PAC equipment and accessories.
8.3.3	Sets up for manual PAC operations on carbon steel, austenitic stainless steel, and aluminum.
8.3.4	Operates manual PAC equipment on carbon steel, austenitic stainless steel, and aluminum.
8.3.5	Performs straight, square edge cutting operations, in the flat position, on carbon steel, austenitic stainless steel, and aluminum.
8.3.6	Performs shape, square edge cutting operations, in the flat position, on carbon steel, austenitic stainless steel, and aluminum.
Standard 9	**Welding Inspection and Testing***CORE*****
	Student Competencies
9.1	Examines cut surfaces and edges of prepared base metal parts.
9.2	Examines tacks, root passes, intermediate layers, and completed welds.